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Using Computer Generated Assignments to Enhance Learning

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Using Computer Generated Assignments to Enhance Learning

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Higher Education Assessments

- ◆ Assignments are an important and necessary part of the learning and assessment process in higher education
- ◆ If the assignments given to students are easily copied then this work will be diminished in the eyes of the students and academic staff
 - Haines (1986), Conner (1985), Connell (1981)
- ◆ Discriminate against honest students who will find themselves at a disadvantage
 - Todd-Mancillas (1987)

Traditional Method of Assessment

- ◆ Subject background:
 - First unit accounting subject ("Accounting 1")
 - 40% of the subject on the accounting cycle
 - Over 1,500 enrolments per year
- ◆ Students were given a **common** major assignment that encompasses the full accounting cycle from journalising transactions through to preparing financial statements
- ◆ Tutors were given a **common** solution for all students

Traditional Method of Assessment

- ◆ This conventional method of assessment means all students have the same assignment specifications and the assignment is thus highly “duplicable” and easily plagiarised
 - Haines (1986), Maslen (1993)
- ◆ “Practice sets” suffer the same limitations
- ◆ Research suggests that educators should try to devise ways to forestall these activities, help overcome students’ apathy, and enhance the learning experience
 - Connor (1985), Connell (1981)

Individualising Assignments

- ◆ In 1996, we started using a specifically-written computer software to generate individualised assignments
 - All aspects of the assignment can be customised within the specified parameters
 - All values are generated by a randomiser module
- ◆ While every assignment is different, there are common specifications for all businesses and business-specific specifications
 - “Common” versus business specific accounts, transactions, opening balances, and other variables

Individualising Assignments

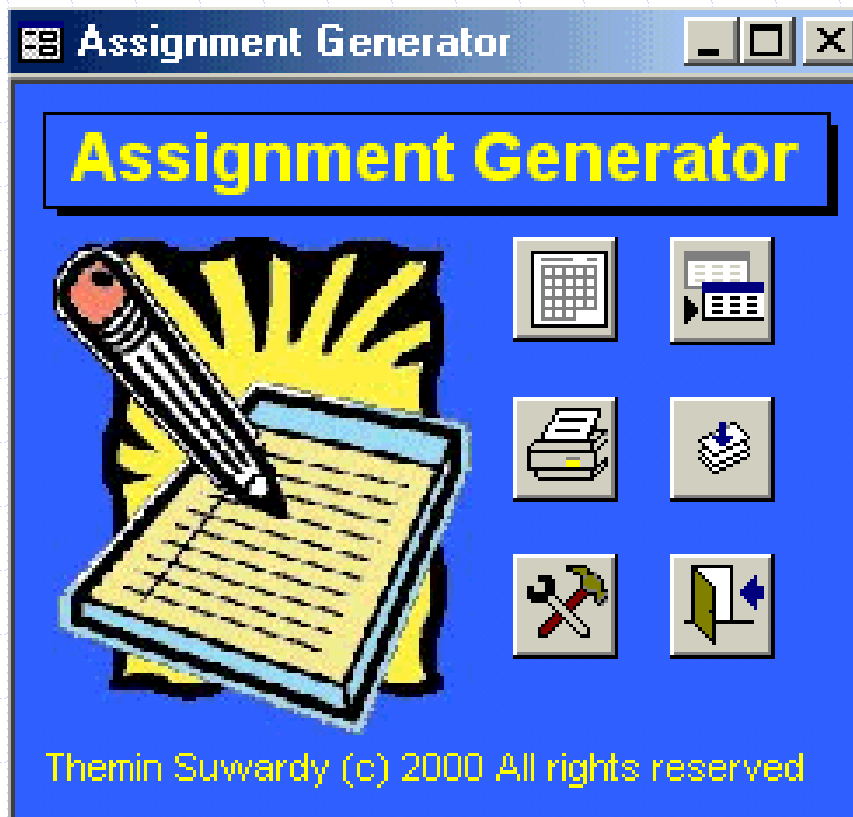
- ◆ The requirements and instructions to complete the assessment is common
 - Each student is handed a unique datasheet detailing the detail of his or her assignment
 - The datasheet is also numbered and tutors keep a record of the assignment numbers distributed
- ◆ Cooperative learning is encouraged
 - Cottell and Millis (1993), Kagan (1989), Pemberton and Krueger (1991)
- ◆ Solutions are provided to the tutors in the form of a “solution module”
 - Tutors key in the unique assignment number and solution to the assignment can be printed

Assignment Generator

- ◆ Written in Microsoft Access
- ◆ Assignments (and solutions) can be generated in a matter of minutes
 - 500 unique assignments and solutions take about 2 minutes to create
- ◆ No built-in limitations on the number of assignments and assignment specifications
- ◆ Demonstration
 - See attached printouts for sample instruction, datasheet and solutions

Assignment Generator

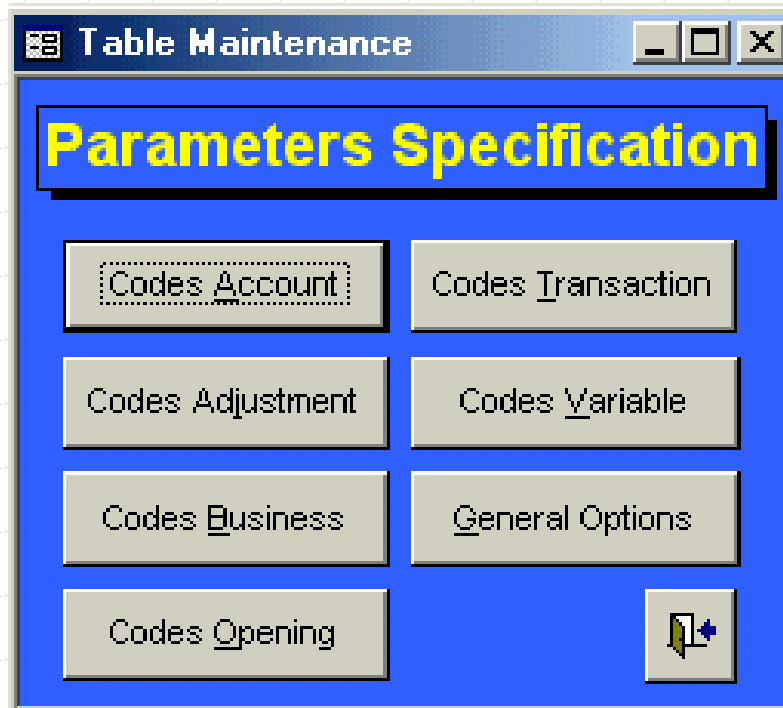
◆ Main menu and icons



Generate datasets
View Solutions
Print datasets
Print Solutions
Parameters
Exit

Assignment Generator

◆ Parameters specification screen



Assignment Generator

- ◆ Sample screen for different business scenarios

Business Codes

Business Codes

Code

Name Celestial Body Workshop

Proprietor Mr. U. Niverse

Description Gymnasium and Health Club

Comments

- This business was purchased on 1 June 2000. You are required to prepare a general journal entry to incorporate the opening balances into the current period, including the balancing Capital.
- You will need to refer to the Additional Information section for your Balance Day Adjustments.
- The rent and insurance period start on 1 June.

Use Ctrl-Enter to start new line for comments

Record: 1 of 4

Business Codes

Business Codes

Code

Name Feng Shui Homes

Proprietor Ms. G.L. Charms

Description Real Estate Agent

Comments

- This business was purchased on 1 June 2000. You are required to prepare a general journal entry to incorporate the opening balances into the current period, including the balancing Capital.
- You will need to refer to the Additional Information section for your Balance Day Adjustments.
- The rent and insurance period start on 1 June.

Use Ctrl-Enter to start new line for comments

Record: 2 of 4

Assignment Generator

- ◆ Sample opening account balance parameters

Opening Codes

| Code | Account | Value Min | Value Max |
|------|---------|-----------|-----------|
| 1 | 0100 | \$10,000 | \$20,000 |
| 2 | 0101 | \$15,000 | \$25,000 |
| 3 | 0102 | \$30,000 | \$40,000 |
| 4 | 0200 | \$7,000 | \$10,000 |
| 5 | 0201 | \$20,000 | \$30,000 |
| A1 | A100 | \$15,000 | \$25,000 |
| A2 | A101 | \$400 | \$500 |
| B1 | B100 | \$20,000 | \$30,000 |
| B2 | B101 | \$500 | \$600 |
| C1 | C100 | \$30,000 | \$40,000 |
| C2 | C101 | \$600 | \$700 |
| C3 | C102 | \$1,500 | \$2,000 |
| D1 | D100 | \$15,000 | \$22,000 |
| D2 | D101 | \$700 | \$900 |

Record: 1 of 14

Assignment Generator

◆ Sample transactions settings

Transaction Codes

| Code | Description | Accounts | Occurrence | Date | Value |
|------|-------------------------------|----------|------------|------|---------|
| 01 | Staff Wages | DR 0500 | Min 4 | 1 | \$1,000 |
| | | CR 0100 | Max 4 | 30 | \$1,500 |
| 02 | Advertising Expense - Cash | DR 0507 | Min 2 | 2 | \$300 |
| | | CR 0100 | Max 2 | 30 | \$500 |
| 03 | Advertising Expense - Account | DR 0507 | Min 2 | 5 | \$500 |
| | | CR 0200 | Max 2 | 30 | \$800 |
| 04 | Cash Withdrawals by Owner | DR 0350 | Min 2 | 5 | \$400 |
| | | CR 0100 | Max 2 | 22 | \$600 |
| 05 | Motor Vehicle Expenses | DR 0501 | Min 2 | 1 | \$100 |
| | | CR 0100 | Max 2 | 30 | \$300 |
| 06 | Payment to Account Payable | DR 0200 | Min 2 | 1 | \$500 |
| | | CR 0100 | Max 3 | 30 | \$1,500 |
| 07 | Sundry Expenses | DR 0503 | Min 2 | 1 | \$100 |
| | | CR 0100 | Max 3 | 30 | \$300 |

Record: 1 of 41

Assignment Generator

◆ Sample variable parameter specifications

| Variable Codes | | | |
|----------------|---|-----------|-----------|
| Variable Codes | | | |
| Code | Description | Value Min | Value Max |
| 1 | Bank loan interest rates (% per year) | 8 | 12 |
| 2 | Motor vehicle useful life (years) | 2 | 6 |
| 3 | Motor vehicle scrap value (\$) | 2000 | 6000 |
| 4 | Insurance paid for (months) | 2 | 5 |
| 5 | Rent paid for (months) | 3 | 6 |
| A1 | Gym equipment useful life (years) | 3 | 5 |
| A2 | Gym equipment scrap value (\$) | 4000 | 6000 |
| A3 | Closing stock of stationery supplies on 30/6 (\$) | 500 | 750 |
| B1 | Furniture useful life (years) | 2 | 4 |
| B2 | Furniture scrap value (\$) | 0 | 0 |
| B3 | Closing stock of promotional materials 30/6 (\$) | 750 | 1000 |
| C1 | Medical equipment useful life (years) | 3 | 5 |
| C2 | Medical equipment scrap value (\$) | 2000 | 4000 |
| C3 | Closing stock of office supplies on 30/6 (\$) | 500 | 1000 |
| C4 | Closing stock of medical supplies on 30/6 (\$) | 1500 | 2500 |

Record: 1 of 18

Assignment Generator

◆ Sample unique Datasheet handed out to students

Monash University Department of Accounting and Finance



Accounting for Financial Decision Making AFX1110 - Assignment 2008/02

| Key: | 6000 | Date | Description | Amount |
|-------------|-------------------|--------|--|---------|
| Proprietor | M. G. L. Clarke | 1-Jul | First Loan Interest | \$2,446 |
| Owner | Pragathi Hennes | 3-Jul | Accounts payable - Cash | \$1,834 |
| Description | Real Estate Agent | 3-Jul | Revenue Payment from Assistant Customers | \$1,741 |
| | | 3-Jul | Revenue Payment from Owner | \$2,646 |
| | | 4-Jul | Accounts payable - Assistant | \$1,129 |
| | | 4-Jul | Advertising placement fees - Cash | \$1,655 |
| | | 5-Jul | Advertising Expense - Assistant | \$5.11 |
| | | 5-Jul | Advertising Expense - Assistant | \$5.73 |
| | | 6-Jul | Revenue Interest - Cash | \$1,592 |
| | | 7-Jul | Salary Expense | \$2.23 |
| | | 8-Jul | Staff Wages | \$1,490 |
| | | 8-Jul | Payment to Assistant Payable | \$1,100 |
| | | 9-Jul | Revenue Interest - Cash | \$1,667 |
| | | 10-Jul | Motor Vehicle Depreciation | \$2.67 |
| | | 10-Jul | Purchase professional materials | \$3.75 |
| | | 10-Jul | Advertising placement fees - Assistant | \$9.92 |
| | | 12-Jul | Advertising placement fees - Cash | \$3.90 |
| | | 12-Jul | Advertising Expense - Cash | \$3.70 |
| | | 14-Jul | Advertising placement fees - Assistant | \$9.93 |
| | | 15-Jul | Motor Vehicle Depreciation | \$2.60 |
| | | 15-Jul | Staff Wages | \$1,490 |
| | | 15-Jul | Advertising placement fees - Cash | \$9.91 |
| | | 16-Jul | Accounts payable - Assistant | \$7.62 |
| | | 16-Jul | Revenue Interest - Assistant | \$1,268 |
| | | 17-Jul | Accounts payable - Cash | \$1,845 |
| | | 17-Jul | Advertising Expense - Cash | \$4.91 |
| | | 19-Jul | Revenue Interest - Cash | \$1,739 |
| | | 19-Jul | Revenue Interest - Assistant | \$1,494 |
| | | 19-Jul | Payment to Assistant Payable | \$9.94 |
| | | 19-Jul | Cash Withdrawal by Owner | \$5.68 |
| | | 19-Jul | Cash Withdrawal by Owner | \$5.30 |
| | | 21-Jul | Salary Expense | \$1.30 |
| | | 21-Jul | Advertising placement fees - Assistant | \$1,161 |
| | | 21-Jul | Purchase professional materials | \$4.28 |
| | | 22-Jul | Payment to Assistant Payable | \$1,291 |
| | | 22-Jul | Staff Wages | \$1,490 |
| | | 23-Jul | Accounts payable - Cash | \$1,724 |
| | | 24-Jul | Advertising placement fees by owner | \$4,262 |
| | | 26-Jul | Revenue Payment from Assistant Customers | \$1,865 |
| | | 28-Jul | Staff Wages | \$1,490 |
| | | 28-Jul | Revenue Payment from Assistant Customers | \$1,812 |

Additional Information:

Bank loan interest rate (% per year) 10

Motor vehicle useful life (years) 5

Motor vehicle carrying value (\$) 4954

Insurance paid for (monthly) 3

Rent paid for (monthly) 3

Purchase useful life (years) 2

Purchase carrying value (\$) 9

Carrying value of professional materials 766 (\$)

Exercise:

- This business was purchased on 1 June 2006.

- You are required to prepare a general journal entry to incorporate the opening balances into the current period, including the following Capital.

- You will need to refer to the Additional Information section for your Finance Day Adjustments.

- The initial income period starts on 1 June.

- Show three types of revenue, namely retail accounted on, machine accounted on and advice mail, placement fees. All revenue records all over for the month of June.

- Utilities are not included, all transactions are on credit basis. Use your general Assistant Payable for all debts and use general Assistant Payable for all credits.

- Year 01 should show more and finally, divided into more and more.

- Staff work a 7-day week and are paid on the 15th day.

Assignment Generator

◆ Sample Solutions

Feng Shui Homes 10-Column Worksheet - Key # 1

AFX1110 2000/02

14-Jan-01

| Description | Unadjusted T/B | | Adjustments | | Adjusted T/B | | Profit and Loss | | Balance Sheet | |
|-------------------------------|------------------|------------------|----------------|----------------|------------------|------------------|-----------------|-----------------|------------------|------------------|
| | DR | CR | DR | CR | DR | CR | DR | CR | DR | CR |
| Cash At Bank | \$19,111 | | | | \$19,111 | | | | \$19,111 | |
| Account Receivable | \$22,201 | | | | \$22,201 | | | | \$22,201 | |
| Motor Vehicle | \$36,062 | | | | \$36,062 | | | | \$36,062 | |
| Prepaid Rent | \$3,646 | | | \$1,215 | \$2,431 | | | | \$2,431 | |
| Prepaid Insurance | \$2,446 | | | \$1,223 | \$1,223 | | | | \$1,223 | |
| Account Payable | | \$5,557 | | | | \$5,557 | | | | \$5,557 |
| Bank Loan (due 2005) | | \$21,829 | | | | \$21,829 | | | | \$21,829 |
| Capital | | \$66,872 | | | | \$66,872 | | | | \$66,872 |
| Drawings | \$1,095 | | | | \$1,095 | | | | \$1,095 | |
| Staff Wages Exp | \$5,960 | | \$426 | | \$6,386 | | \$6,386 | | | |
| Motor Vehicle Exp | \$527 | | | | \$527 | | \$527 | | | |
| Sundry Exp | \$362 | | | | \$362 | | \$362 | | | |
| Advertising Exp | \$1,951 | | | | \$1,951 | | \$1,951 | | | |
| Furniture | \$23,218 | | | | \$23,218 | | | | \$23,218 | |
| Promotional Material Supplies | \$1,394 | | | \$521 | \$873 | | | | \$873 | |
| Rental Commission Rev | | \$7,610 | | | | \$7,610 | | \$7,610 | | |
| Auction Commission Rev | | \$7,294 | | | | \$7,294 | | \$7,294 | | |
| Advertising Fees Rev | | \$5,811 | | | | \$5,811 | | \$5,811 | | |
| Acc. Deprn. - Motor Vehicle | | | | \$516 | | \$516 | | | | \$516 |
| Accrued Interest Expense | | | | \$182 | | \$182 | | | | \$182 |
| Accrued Staff Wages | | | | \$426 | | \$426 | | | | \$426 |
| Interest Exp | | | \$182 | | \$182 | | \$182 | | | |
| Rent Expense | | | \$1,215 | | \$1,215 | | \$1,215 | | | |
| Insurance Exp | | | \$1,223 | | \$1,223 | | \$1,223 | | | |
| Depreciation Exp | | | \$1,485 | | \$1,485 | | \$1,485 | | | |
| Acc. Deprn. - Furniture | | | | \$567 | | \$567 | | | | \$567 |
| Promotional Materials Exp | | | \$521 | | \$521 | | \$521 | | | |
| Subtotal | | | | | | | \$13,852 | \$20,715 | \$106,214 | \$99,351 |
| Net Profit / Loss | | | | | | | \$6,863 | | | \$6,863 |
| Total | \$117,973 | \$117,973 | \$5,052 | \$5,052 | \$120,066 | \$120,066 | \$20,715 | \$20,715 | \$106,214 | \$106,214 |

Significance and Implications

- ◆ Significantly reduce plagiarism opportunities
- ◆ About 80% of students prefer individualised assignments to common assignments and believe individualised assignments results in better understanding of the subject materials
 - Waldmann (2000)
- ◆ All teaching staff felt that individual assignments enhance the learning process
- ◆ Currently developing a generic case study generator that can be used in other subjects
 - Cost accounting, management accounting